AAMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1.   (previously presented) A method for a space-time filtering of noise in radiography comprising:

a.   for each pixel having coordinates (x,y) of a first image, a weighting is performed on coefficients U(k,l) of a first convolution core with a dimension D, equivalent to a low-pass filter, as a function of a coefficient G which is a function of a difference computed between I(x,y) and I(x+k, y+l), where I(x,y) is an intensity of the pixel with coordinates (x,y) of the first image, and k and l are indices used to explore the coefficients of the first convolution core, a second convolution core with coefficients Up(k,l) being thus obtained;

b.   for each pixel with coordinates (x,y) of the first image, a weighting is performed on the coefficients U(k,l) of the first convolution core as a function of the coefficient G which is a function of the difference computed between I(x,y) and I'(x+k, y+l), where I'(x,y) is an intensity of the pixel with coordinates (x,y) of a second image, a third convolution core with coefficients Up'(k,l) being thus obtained; and

c.   a filtered value of I(x,y) is computed by the formula:

$$F(x,y) = \left(\sum_{k=-L}^{L}\sum_{l=-L}^{L} \left(\gamma * Up(k,l)I(x+k,y+l) + (1-\gamma)*Up'(k,l)I'(x+k,y+l) \right) \right) / N \ .....(1)$$

$$L = \frac{(D-1)}{2} \ .....(2)$$

$$\gamma \in [0,1] \ ....(3)$$

$$N = \sum_{k=-L}^{L}\sum_{l=-L}^{L} \left(\gamma * Up(k,l) + (1-\gamma)*Up'(k,l) \right) \ ....(4)$$

where F(x,y) is the filtered value of I(x,y); and

wherein D is greater than 1;

wherein a value of γ is greater than 0 and less than 1.

2.   (previously presented) The method according to claim 1 wherein:

$Up(k,l) = U(k,l)xG(I(x+k,y+l)-I(x,y); \sigma(I(x,y)))$; and

$Up'(k,l) = U(k,l)xG(I'(x+k,y+l)-I(x,y); \lambda\sigma(I(x,y)))$

with G as a weighting function depending on a difference $\underline{\varepsilon}$ between the value of the pixel
to be filtered and its neighborhood and depending on a noise statistic $\underline{\sigma}$ for the value of
the pixel to be filtered at a filter strength defined by λ.

3.   (previously presented) The method according to claim 2 wherein G is a
function of a difference ϵ computed and of a known noise statistic σ for I(x,y), the
coefficient G being then written as a function $G(\epsilon, \sigma)$, where G is therefore a value in
terms of ϵ of a Gaussian curve centered on 0 and having a standard deviation σ.

4.   (previously presented) The method according to claim 2 wherein G is a
function of the computed difference ϵ of the following type:

$G(\epsilon) = -a. \epsilon + 1$, with a > 0,

$Up(k,l) = U(k,l)xG(I(x+k,y+l)-I(x,y))$, and

$U'p(k,l) = U(k,l)xG(I'(x+k,y+l)-I(x,y))$.

5.   (original) The method according to claim 2 wherein λ is a real number.

6.   (original) The method according to claim 3 wherein λ is a real number.

7.   (original) The method according to claim 4 wherein λ is a real number.

8.   (original)   The method according to claim 1 wherein equation (1) becomes:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma)*Up'(k,l).F'(x+k,y+l) \right) \right) / N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second image.

9.   (original)   The method according to claim 2 wherein equation (1) becomes:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma)*Up'(k,l).F'(x+k,y+l) \right) \right) / N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second image.

10.   (original) The method according to claim 3 wherein equation (1) becomes:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma)*Up'(k,l).F'(x+k,y+l) \right) \right) / N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second image.

11.   (original) The method according to claim 4 wherein equation (1)
becomes:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} (\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma) * Up'(k,l).F'(x+k,y+l)) \right) / N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second
image.

12.   (original) The method according to claim 5 wherein equation (1)
becomes:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} (\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma) * Up'(k,l).F'(x+k,y+l)) \right) / N$$

where F'(x,y) is the filtered intensity of the pixel with coordinates (x,y) of the second
image.

13-18.   (canceled)

19.   (previously presented) The method according to claim 1 wherein the first
and second images are successive images of a sequence of images, the first image having
a time t, and the second image having a time t-1.

20.   (previously presented) The method according to claim 2 wherein the first
and second images are successive images of a sequence of images, the first image having
a time t, and the second image having a time t-1.

21.   (previously presented) The method according to claim 3 wherein the first and second images are successive images of a sequence of images, the first image having a time t, and the second image having a time t-1.

22.   (previously presented) The method according to claim 4 wherein the first and second images are successive images of a sequence of images, the first image having a time t, and the second image having a time t-1.

23.   (previously presented) The method according to claim 5 wherein the first and second images are successive images of a sequence of images, the first image having a time t, and the second image having a time t-1.

24.   (previously presented) The method according to claim 8 wherein the first and second images are successive images of a sequence of images, the first image having a time t, and the second image having a time t-1.

25.   (previously presented) The method according to claim 13 wherein the first and second images are successive images of a sequence of images, the first image having a time t, and the second image having a time t-1.

26.   (original) The method according to claim 1 wherein D is equal to 5.

27.   (original) The method according to claim 2 wherein D is equal to 5.

28.   (original) The method according to claim 3 wherein D is equal to 5.

29.   (original) The method according to claim 4 wherein D is equal to 5.

30.   (original) The method according to claim 5 wherein D is equal to 5.

31.   (original) The method according to claim 8 wherein D is equal to 5.

32.   (original) The method according to claim 13 wherein D is equal to 5.

33.   (original) The method according to claim 19 wherein D is equal to 5.

34.   (original) The method according to claim 1 wherein D is greater than 5.

35.   (original) The method according to claim 2 wherein D is greater than 5.

36.   (original) The method according to claim 3 wherein D is greater than 5.

37.   (original) The method according to claim 4 wherein D is greater than 5.

38.   (original) The method according to claim 5 wherein D is greater than 5.

39.   (previously presented) The method according to claim 8 wherein D is greater than 5.

40.   (previously presented) The method according to claim 13 wherein D is greater than 5.

41.   (original) The method according to claim 19 wherein D is greater than 5.

42.   (cancelled)

43.   (original) The method according to claim 1 wherein D is an odd number.

44.   (original) The method according to claim 2 wherein D is an odd number.

45.   (original) The method according to claim 3 wherein D is an odd number.

46.   (original) The method according to claim 4 wherein D is an odd number.

47.   (original) The method according to claim 5 wherein D is an odd number.

48.   (original) The method according to claim 8 wherein D is an odd number.

49.   (original) The method according to claim 13 wherein D is an odd number.

50.   (original) The method according to claim 19 wherein D is an odd number.

51.   (original) The method according to claim 26 wherein D is an odd number.

52.   (original) The method according to claim 34 wherein D is an odd number.

53.   (original) A space-time convolution filter designed according to the
method of claim 1.

54.   (original) A scanner for radiography having a filter according to claim 53.

55.   (cancelled)

56.   (previously presented) A computer program product comprising a computer readable medium having computer readable program code means stored in the medium, the computer program product comprising:

a.   computer readable program code means stored in the medium for causing a computer to provide for each pixel having coordinates (x,y) of a first image, a weighting is performed on coefficients U(k,l) of a first convolution core with a dimension D, equivalent to a low-pass filter, as a function of a coefficient G which is a function of a difference computed between I(x,y) and I(x+k, y+l), where I(x,y) is an intensity of the pixel with coordinates (x,y) of the first image, and k and l are indices used to explore the coefficients of the first convolution core, a second convolution core with coefficients Up(k,l) being thus obtained;

b.   computer readable program code means stored in the medium for causing a computer to provide for each pixel with coordinates (x,y) of the first image, a weighting is performed on the coefficients U(k,l) of the first convolution core as a function of the coefficient G which is a function of the difference computed between I(x,y) and I'(x+k, y+l), where I'(x,y) is an intensity of the pixel with coordinates (x,y) of a second image, a third convolution core with coefficients Up'(k,l) being thus obtained; and

c.   computer readable program code means stored in the medium for causing a computer to provide a filtered value of I(x,y) is computed by the formula:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma) * Up'(k,l).I'(x+k,y+l) \right) \right) / N \dots (1)$$

$$L = \frac{(D-1)}{2} \dots (2)$$

$$\gamma \in [0,1] \dots (3)$$

$$N = \sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l) + (1-\gamma) * Up'(k,l) \right) \dots (4)$$

where F(x,y) is the filtered value of I(x,y); and

wherein D is greater than 1;

wherein a value of γ is greater than 0 and less than 1.

57.   (previously presented) An article of manufacture for use with a computer system, the article of manufacture comprising a computer readable medium having computer readable program code means stored in the medium, the program code means comprising:

     a.   computer readable program code means stored in the medium for causing a computer to provide for each pixel having coordinates (x,y) of a first image, a weighting is performed on coefficients $U(k,l)$ of a first convolution core with a dimension D, equivalent to a low-pass filter, as a function of a coefficient G which is a function of a difference computed between $I(x,y)$ and $I(x+k, y+l)$, where $I(x,y)$ is an intensity of the pixel with coordinates (x,y) of the first image, and k and l are indices used to explore the coefficients of the first convolution core, a second convolution core with coefficients $Up(k,l)$ being thus obtained;

     b.   computer readable program code means stored in the medium for causing a computer to provide for each pixel with coordinates (x,y) of the first image, a weighting is performed on the coefficients $U(k,l)$ of the first convolution core as a function of the coefficient G which is a function of the difference computed between $I(x,y)$ and $I'(x+k, y+l)$, where $I'(x,y)$ is an intensity of the pixel with coordinates (x,y) of a second image, a third convolution core with coefficients $Up'(k,l)$ being thus obtained; and

     c.   computer readable program code means stored in the medium for causing a computer to provide a filtered value of $I(x,y)$ is computed by the formula:

$$F(x,y) = \left(\sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l).I(x+k,y+l) + (1-\gamma)*Up'(k,l).I'(x+k,y+l) \right) \right) / N \quad .....(1)$$

$$L = \frac{(D-1)}{2} \quad .....(2)$$

$$\gamma \in [0,1] \quad ....(3)$$

$$N = \sum_{k=-L}^{L} \sum_{l=-L}^{L} \left(\gamma * Up(k,l) + (1-\gamma)*Up'(k,l) \right) .....(4)$$

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where F(x,y) is the filtered value of I(x,y); and

wherein D is greater than 1;

wherein a value of γ is greater than 0 and less than 1.

58-60. (canceled)